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The Honorable Donald S. Beyer
Ranking Member
Subcommittee on Oversight
Committee on Science, Space, and Technology
United States House of Representatives

Asbestos in GSA Buildings: Improved Data Would Enhance Oversight

Asbestos, the name given to a group of naturally occurring mineral fibers,[1] was commonly used in construction materials until it was linked to serious illness[2] and therefore fell out of widespread use in the United States (see additional information on asbestos and its effects in enclosure I).[3] According to the Department of Labor's Occupational Safety and Health Administration (OSHA), certain building materials used prior to 1981 are more likely to contain asbestos. More than three-quarters of federally-owned office space in buildings constructed before this date falls under the custody and control of the General Services Administration (GSA), which provides real-estate management and other administrative support services for the federal government.[4]

You asked us to provide information on asbestos in federal buildings, with particular emphasis on the risks to federal office workers. This report (1) assesses the extent to which GSA collects and maintains information on the location and condition of asbestos in its office buildings, and (2) describes regulations that are designed to protect workers from asbestos, and the circumstances under which federal workers have been exposed.

To analyze GSA's information on asbestos in its office buildings, we reviewed GSA's 2015 policy regarding asbestos documentation and management, and analyzed data collected by

[1]The Toxic Substances Control Act (Pub. L. No. 94-469, 90 Stat. 2003 (1976)), as amended by the Asbestos Hazard Emergency Response Act of 1986 (Pub. L. No. 99-519, § 2, 100 Stat. 2970, 2791 (1986) (codified, as amended at 15 U.S.C. § 2642(3)) defines asbestos as the asbestiform varieties of: chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite/grunerite); anthophyllite; tremolite; and actinolite.

[2]The Centers for Disease Control and Prevention (CDC) reported that more than 2,500 people died in the United States during 2015 of malignant mesothelioma, a disease related to asbestos. Department of Health and Human Services, Centers for Disease Control and Prevention, *Malignant Mesothelioma Mortality* — United States, 1999–2015, Morbidity and Mortality Weekly Report, Vol. 66, No. 8 (Atlanta, GA: Mar. 3, 2017).

[3]Although it is still permitted in certain circumstances, the Environmental Protection Agency (EPA) increasingly regulated asbestos-containing materials beginning in 1973. In June 2018, EPA issued a proposed significant new use rule (SNUR) for certain asbestos uses identified by EPA as no longer ongoing. Specifically, these uses include adhesives, sealants, and roof and non-roof coatings; millboard; pipeline wrap; roofing felt; vinyl-asbestos floor tile; and any other building material (other than cement), among others. These uses could not commence until EPA has conducted a review, made a determination, and taken any associated actions EPA deems required. 83 Fed. Reg. 26922 (June 11, 2018).

[4]For the purposes of this report, we focused only on federally-owned buildings that are under the custody and control of GSA. We have excluded GSA leased properties. We also excluded buildings in GSA's portfolio that are managed by an entity (such as another federal agency) through a delegation from GSA.

GSA in the Inventory Reporting Information System (IRIS) on the presence of asbestos in the office buildings under its custody and control. We also reviewed relevant documentation—such as asbestos surveys—from 44 buildings,[5] and compared GSA's information management practices against federal internal control standards.[6] To describe worker protections, we reviewed pertinent laws, regulations, and asbestos-related OSHA citations in federal buildings from fiscal year 2013 through February 2018 (the most recent data available at the time of our review). To describe the circumstances under which federal workers were exposed to asbestos, we reviewed data on asbestos-related claims from the Department of Labor's Office of Workers' Compensation Programs (OWCP) from fiscal year 2013 through March 2018 (the most recent data available at the time of our review). We assessed the reliability of GSA's and Labor's data by reviewing documentation on these data and interviewing knowledgeable agency officials and determined that the data were sufficiently reliable for the purposes used in this report. Lastly, we interviewed GSA, OSHA, CDC, EPA, and OWCP officials responsible for managing their agencies' respective asbestos-related programs.

We conducted this performance audit from February 2018 to November 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Results in Brief

We found that:

- While GSA captures information on the location and condition of asbestos in its buildings using paper or electronic surveys, it lacks the necessary data to conduct national oversight. Specifically, GSA's policy says that the agency should have an asbestos survey in each building constructed prior to 1998, and should enter the results of that survey into IRIS. However, we found that these data were missing for 66 percent (289 of 436) of the office buildings under GSA's custody and control that were constructed before that date. Furthermore, GSA's asbestos policy requires that the agency annually re-inspect the condition of asbestos-containing material. However, IRIS does not have a data field to capture the date of the last inspection, and GSA does not have another mechanism to track when or if these annual re-inspections took place.
- A variety of regulations are designed to protect federal workers, such as labeling asbestos-containing materials and asbestos disposal procedures. OWCP approved 50 federal workers' claims for asbestos-related injury between fiscal year 2013 and March 2018, most of which were for workers in industrial occupations.

We are recommending that GSA take action to remedy the asbestos-related shortcomings in the database, including (1) entering the missing data and (2) implementing a mechanism to track the re-inspection of asbestos-containing materials.

[5]We selected these buildings to capture different issues reflected in IRIS, such as buildings with damaged asbestos, buildings with no information on the condition of asbestos, and buildings with no asbestos-related information keyed into IRIS. These selections are not representative.

[6]GAO, *Standards for Internal Control in the Federal Government,* GAO-14-704G (Washington, D.C.: September 2014).

GSA Captures the Location and Condition of Asbestos in Surveys, but Much of this Information is Not in the Agency's Database and Condition Information May be Outdated

While GSA collects information on the location and condition of asbestos-containing materials in its buildings, the majority of this information is missing from IRIS. GSA keeps asbestos location and condition information in two formats:

Pre-defined fields in the IRIS database. Per GSA policy, as of 2015, all GSA buildings constructed prior to 1998 should have an initial baseline asbestos survey and the results of those surveys should be keyed into IRIS (for additional GSA policy requirements, see enclosure I).[7] However, we found that 289 of the 436 office buildings under GSA's custody and control that were constructed before 1998—approximately 66 percent—did not have any asbestos-related data keyed into the database.

A GSA official explained that the data for these 289 buildings had not yet been entered into IRIS because the database's interface is not user friendly and requires difficult workarounds, so only one designated person typically enters the data to avoid errors. The official stated that the agency has developed a plan to update the interface so that it will be more user-friendly. However, the agency delayed the update from September 2018 to fiscal year 2019 and implementation of the plan is contingent on funding. According to the official, GSA has a plan to do a variety of upgrades to the IRIS database that would cost about $550,000, of which specific upgrades related to asbestos reporting are estimated to cost between $50,000 and $100,000. The official noted that if GSA funds the plan in fiscal year 2019, there will be a new interface as well as training for 11 regional officials to enter and update data via the new interface. He stated that these 11 officials would be expected to enter all of the missing data within 4 months after the updates are implemented. However, if the plan is not funded, GSA lacks an alternative strategy to incorporate the missing data, such as training additional staff to enter data or realigning responsibilities to facilitate faster input using the existing system. A GSA official acknowledged that having complete information in IRIS would support national oversight and regional analysis of asbestos management, as well as allow local building managers to run reports. Federal internal control standards[8] state that agencies should have information systems that allow them to meet their objectives and respond to risks, but GSA is not able to use IRIS for these purposes without the necessary data.

Paper or electronic surveys. These documents are kept at the surveyed building or regional office, or can be downloaded as a scanned file from IRIS. According to a GSA official, the surveys are conducted by certified inspectors and provide detailed asbestos location and condition information. GSA officials stated that these surveys are sufficient to support individual building operations, such as maintenance, construction work, or conducting an annual re-inspection of asbestos-containing materials. Of the 536 office buildings under GSA's custody and control, 436 were constructed before 1998 and should therefore have baseline asbestos surveys.

[7]The IRIS database fields include the location and condition information from the surveys, among others.
[8]GAO-14-704G.

We reviewed documentation from 44 of these 436 buildings and found detailed location and condition information in each of the 38 buildings where asbestos was detected.[9] For example, most of the surveys included floorplans identifying the location of specific asbestos-containing materials. In addition, all of the surveys provided either a written summary or a table of the materials' condition. In a few cases, the surveys contained hundreds of pages of information.[10] However, for 1 of the 44 buildings, officials were unable to locate either a survey or documentation that asbestos was not present.[11] According to a GSA official who oversees the agency's asbestos program, missing documentation would be more readily apparent if all of the existing information was entered into IRIS, and GSA could address gaps.

Furthermore, GSA's asbestos policy requires that the agency conduct an annual surveillance exam—i.e., a re-inspection—of asbestos-containing material to ensure that it has not degraded or become damaged. GSA officials explained that following a re-inspection, a GSA official should enter any changes into IRIS. However, we found that IRIS lacks a data field to capture the date that material was re-inspected, and GSA has not developed another mechanism to track re-inspections. A GSA official who oversees the agency's asbestos program observed that if regional and headquarters officials were able to see when the last inspection took place, it would be easier to oversee compliance with GSA's annual re-inspection policy. GSA officials told us that they believe that they can address this via the proposed interface update, as the update would add a re-inspection tracking feature that captures the date of re-inspection. As noted above, federal internal control standards state that agencies should have information systems that allow them to meet their objectives and respond to risks; however, at this time, no decision has been made to fund the plan and GSA currently has no alternative to capture this information. Without a mechanism to track re-inspections, management does not have assurance that the re-inspections are taking place as required, and condition information in IRIS could be outdated. If condition re-inspections are not conducted—or are not conducted at the annual interval prescribed by GSA policy—workers could be exposed to damaged asbestos fibers that are unnoticed.

OSHA Regulations Are Designed to Protect Workers from Asbestos, and Few Federal Workers Claimed Asbestos-Related Injury Between Fiscal Year 2013 and March 2018

OSHA establishes regulations that cover the exposure of workers, including federal workers, to asbestos. However, identified violations of these regulations are relatively uncommon in federal facilities. For example, of 4,264 inspections OHSA conducted of federal agencies from fiscal year 2013 through February 28, 2018, 72 inspections (less than 2 percent) identified asbestos-related violations. OSHA officials noted that their inspectors look for asbestos hazards during the course of other inspections; however, they rarely find such violations at federal facilities. For more information on OSHA inspections, violations, and protections for workers, see enclosure II.

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[9]We selected and reviewed 16 buildings with IRIS data indicating they contained damaged asbestos or damaged, suspected asbestos-containing materials; 12 buildings where some asbestos-related data were entered into IRIS but no condition information was present; and 16 buildings where there was no asbestos-related data keyed into the database. Of these 44 buildings, 38 had surveys that found asbestos, 5 had documentation that asbestos was not used in the construction of the building, and in one building, officials could not locate a survey or evidence that asbestos was not present.

[10]These findings are not generalizeable to the surveys we did not examine.

[11]An official who oversees the agency's asbestos program stated that neither he nor the building manager could recall the building being surveyed. He noted that the building's small size (~10,000 square feet) and location on a campus (versus being a standalone building) may have contributed to the lack of a survey. The official said that other, larger buildings on the campus had been surveyed, and the building without a survey will be inspected in fiscal year 2019.

OWCP administers a disability compensation program for federal civilian employees harmed by occupational injuries and diseases. Asbestos-related claims from federal workers accounted for a very small portion of the workers' compensation claims we reviewed. From fiscal year 2013 through March 31, 2018, OWCP received 611,310 claims, of which 408 were asbestos-related (less than 0.1 percent). Of those, OWCP approved 50. Many of these approved claims were for workers in industrial occupations, such as a boilermaker. For more information on asbestos-related injury claims, see enclosure III.

Conclusions

The presence of asbestos-containing materials in a federal building does not mean that the health of the occupants is necessarily endangered. However, maintaining accurate records on the location and condition of these materials is a key step in protecting workers from harm. Because decisions have not been made to either fund GSA's plan to address the shortcoming in the IRIS database or develop alternatives in the absence of approving the plan, GSA does not have an information system that can fully capture data on asbestos in a timely fashion. As a result, GSA is not well-positioned to oversee the management of asbestos in its facilities.

Recommendations for Executive Action

We are making the following two recommendations to GSA:

The Administrator of GSA should remedy the asbestos-related data shortcomings in IRIS, either by approving the proposed update to IRIS and its associated funding or by implementing an alternative plan to enter asbestos data via the existing interface. This alternative plan could include, for example, training more individuals to use the current database functions. (Recommendation 1)

The Administrator of GSA should implement a mechanism to track the last-inspected date for asbestos-containing materials. This mechanism could take the form of the proposed update to the IRIS database, or another tracking method. (Recommendation 2)

Agency Comments

We provided a draft of this report to GSA, Labor, EPA, and Health and Human Services (HHS) for comments.

We will send copies to the Administrators of GSA and EPA, and the Secretaries of HHS and Labor. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or rectanusl@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to

this report are Andrew Huddleston (Assistant Director); Alison Snyder (Analyst in Charge); Blake Ainsworth; Cindy Brown Barnes; Monika Gomez; Geoffrey Hamilton; Mike Mgebroff; Josh Ormond; Laurel Voloder; Michelle Weathers; and Cyrelle White.

Sincerely yours,

Lori Rectanus
Director
Physical Infrastructure

Enclosures

I. Background

EPA's Asbestos Regulation

Several laws authorize or require EPA to regulate asbestos use and abatement. As shown in figure 2, below, since 1970, EPA has been subject to various statutory requirements and has been provided various regulatory authorities. EPA limited the permitted applications of asbestos and developed technical educational materials.

Figure 2: Timeline of Selected EPA Statutes, Asbestos Regulations, and Guidance

1970: The Clean Air Amendments Act of 1970 was enacted into law. The statute required EPA to publish regulations to protect the public from hazardous air pollutants.

1971: EPA added asbestos to its list of hazardous air pollutants.

1973: EPA rule banned certain manufacturing operations involving applications of materials containing more than 1 percent asbestos, such as spray-applied fireproofing and insulation.

1975: EPA rule banned the installation of friable asbestos to insulate or fireproof manufacturing facility components such as pipes, ducts, and boilers.

1976: The Toxic Substances Control Act was enacted into law, giving EPA additional regulatory powers with respect to substances that harm human health, such as asbestos.

1978: EPA rule banned spray-applied surfacing materials for purposes not covered by previous bans.

1979-1985: EPA published a series of books providing technical guidance in asbestos control.

1988: The Asbestos Information Act of 1988 was enacted into law, which requires that any person who manufactured or processed asbestos for certain purposes submit specified types of information about such asbestos or asbestos-containing material to EPA Administrator.

1989: EPA rule prohibited the future manufacture, importation, processing, and commercial distribution of asbestos.

1991: A federal appeals court vacated most of EPA's 1989 rule. According to EPA, only the bans on corrugated paper, rollboard, commercial paper, specialty paper, and flooring felt and any new uses of asbestos remain banned under the 1989 rule.

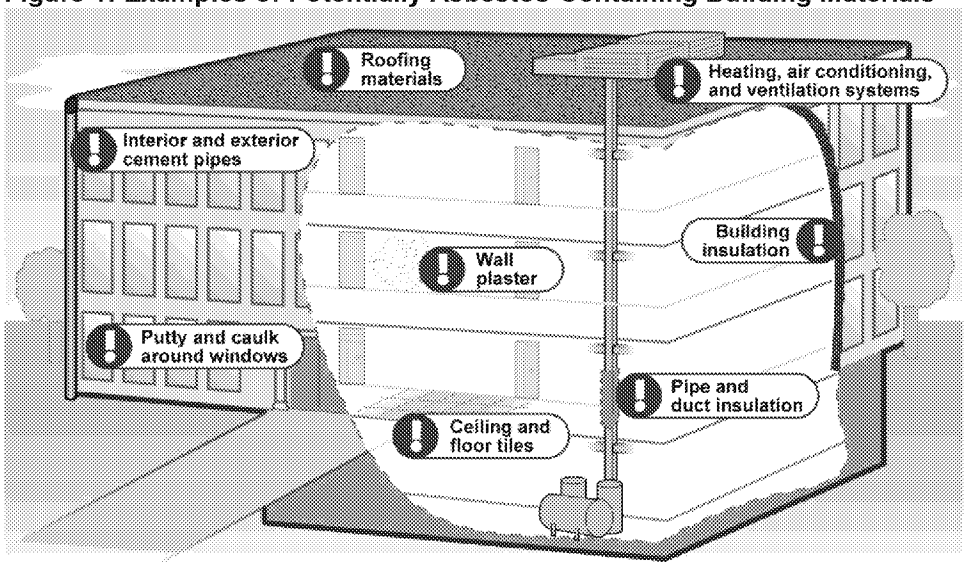
2000-2010: EPA updated the guidance documents for asbestos in the home, asbestos in brakes, and has issued guidance for vermiculite attic insulation, according to EPA officials.

Source: EPA and GAO analysis of key EPA asbestos-related statutes, regulations, guidance, and federal caselaw. | GAO-19-45R

Hazards Posed By Asbestos

Asbestos is the name given to a group of naturally occurring mineral fibers that are resistant to heat and corrosion. Prior to 1981, asbestos was commonly used in building materials such as insulation, floor tiles, plaster, ceiling tiles, and pipe wrapping, among other materials (see figure 1, below).[12] Asbestos is still permitted in certain building materials, although the Environmental Protection Agency (EPA) limited some uses starting in the 1970s (see figure 2, left).

Figure 1: Examples of Potentially Asbestos-Containing Building Materials



Source: GAO analysis of Environmental Protection Agency (EPA) information. | GAO-19-45R

According to EPA, when undisturbed or undamaged, asbestos is not an immediate health hazard. However, when friable and disturbed or damaged, tiny asbestos fibers, too small to see, can be released into the air.[13] According to the Centers for Disease Control and Prevention (CDC), those who breathe asbestos fibers can develop serious or fatal diseases, such as lung cancer or a rare cancer called mesothelioma. According to CDC, mesothelioma is highly correlated with asbestos exposure, but it typically does not develop until decades after an individual is exposed.[14]

In 2017, CDC reported that in the 23 states that document the occupations of those who die of mesothelioma, such deaths were most common among pipe layers, plumbers, electricians, welders, construction managers, and insulation workers, among other industrial occupations.[15] However, office workers' risk of disease resulting from asbestos exposure

[12]The Occupational Safety and Health Administration (OSHA) established 1981 as the date before which certain materials must be presumed under its regulatory standards to contain asbestos.

[13]In general, friable asbestos-containing materials are those that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

[14]According to CDC, asbestos exposure is also associated with diseases such as asbestosis (scarring of the lung) and cancers of the larynx and ovary, among others.

[15]Department of Health and Human Services, Centers for Disease Control and Prevention, Malignant Mesothelioma Mortality — United States, 1999–2015, Morbidity and Mortality Weekly Report, Vol. 66, No. 8 (Atlanta, Georgia: March 3, 2017). CDC officials said that the existing data could not be used to determine work environment, such as an office. With the exception of United States Navy and Air Force personnel, CDC data on mesothelioma and asbestos exposure-related deaths do not indicate numbers of deaths among federal employees.

I. Background continued…

Key Federal Agencies Set Asbestos Standards and Provide Compensation

EPA

- Sets national emissions standards for hazardous air pollutants, including asbestos.
- Sets standards for collecting and testing asbestos samples and asbestos inspection, management, and abatement training.

OSHA

- Promulgates regulations that require that building owners to identify where asbestos is located and, where appropriate, label it as such.
- Sets limits on permissible airborne asbestos exposure limits an employee can be exposed to during any 8-hour work shift.

NIST

- The Department of Commerce's National Institute of Standards and Technology (NIST) oversees accreditation of laboratories that test asbestos samples.[16]

OWCP

- The Department of Labor's Office of Workers' Compensation Programs (OWCP) provides compensation to eligible federal civilian employees and postal workers for occupational injuries and diseases, including diseases resulting from asbestos exposure.

is unknown. CDC also reported that, despite regulatory action and a decline in asbestos use, the annual number of mesothelioma deaths remains substantial. According to CDC, from 1999 through 2015, 45,221 mesothelioma deaths were reported as the underlying or contributing cause of death for persons 25 years of age or older. CDC concluded that the annual number of mesothelioma deaths was increasing, particularly among persons aged 85 or older, likely representing exposure many years ago. The CDC report stated that, although mesothelioma deaths decreased in persons aged 35 to 64, the continuing mesothelioma deaths among persons younger than 55 suggested ongoing asbestos exposures, despite regulatory actions. These exposures could be in the workplace, older homes, or the natural environment. CDC officials stated that there is no way to calculate the number of mesothelioma deaths that would occur if all workplace asbestos exposures were eliminated.

Federally-Owned Buildings Constructed Prior to 1981

According to OSHA, buildings constructed before 1981 are more likely to contain materials with asbestos than buildings constructed in later years; however, there is no centralized record of how many federal buildings contain asbestos.[17] According to the 2017 Federal Real Property Profile Management System,[18] civilian agencies occupied more than 515 million square feet of space located in buildings constructed prior to 1981. Agencies occupy a variety of building types constructed during this timeframe, with the majority of the square footage belonging to office buildings.[19] The General Services Administration (GSA) has custody and control over 78 percent of federally-owned civilian office space (see figure 3, below).

[16]Samples can consist of solid materials suspected to contain asbestos (i.e., bulk sampling) or airborne fibers. In general, the Asbestos Hazard Emergency Response Act (AHERA), enacted in 1986, as amended, requires that laboratories that analyze asbestos samples taken from public, private, or nonprofit elementary or secondary schools or in a public or commercial building be accredited in accordance with specified requirements. AHERA defines public and commercial buildings to mean "any building which is not a school building, except for residential apartment buildings of fewer than 10 units." A 1998 Civilian Federal Agency Task Force "Guide on Evaluating Environmental Liability for Property Transfers" provides that examples of public and commercial buildings include government-owned buildings and that if asbestos surveys or sampling is conducted at a federal facility, the individual(s) performing the survey/sampling should be accredited. In addition, while AHERA does not require laboratory testing for bulk or air samples taken in federal buildings, GSA policy states that bulk samples can only be conclusively identified by lab testing. Furthermore, according to EPA, air sample analysis is most reliably performed by laboratories accredited by NIST and who follow EPA's quality assurance guidelines.

[17]In 1984, EPA estimated that 39 percent of federal facilities contain friable asbestos. In April 2018, EPA officials told us that they have not updated this estimate or conducted subsequent studies estimating the number of federal facilities or buildings that contain asbestos.

[18]This system is the federal government's database of all real property under the custody and control of executive branch agencies.

[19]While the buildings were constructed prior to 1981, areas within them may have been renovated and any asbestos-containing materials removed.

I. Background continued…

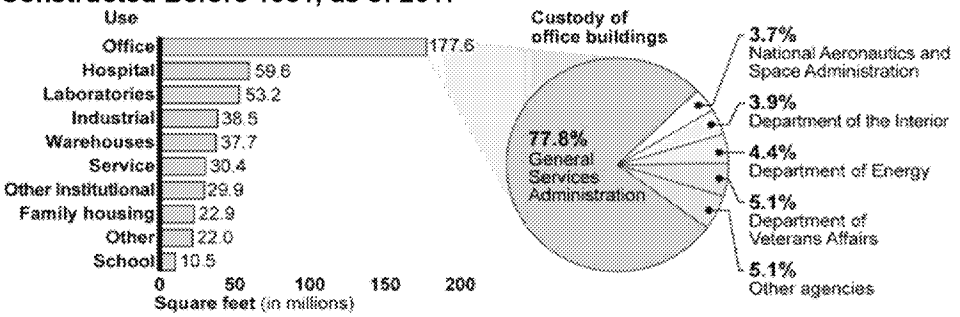
GSA's Inspector General Report on Toxic Materials

In 2015, GSA's Inspector General (IG) reported that GSA regularly collected data on asbestos. However, the IG also found that a lack of oversight and formal policy led to inconsistent environmental management practices across the agency's 11 regions.

In response to these findings, GSA adopted a formal policy on asbestos management in fiscal year 2015. This policy requires, among other things:

- An initial baseline survey for all properties constructed before January 1, 1998. This survey looks at every building component and typically includes analysis of all potential asbestos materials.
- A visual re-inspection of any changes in asbestos location, quantity or condition, at least every 5 years.
- A periodic surveillance re-inspection conducted annually. This abbreviated re-inspection focuses on identifying any changes to the condition of any asbestos.
- That asbestos data be entered into GSA's IRIS database.
- That the agency manage asbestos "in place" when possible, as removing asbestos can release dangerous fibers into the air.
- That the agency maintain asbestos-containing materials in an undamaged state.

Figure 3: Use and Custody of Square Footage in Civilian Federal Buildings Constructed Before 1981, as of 2017



Source: GAO analysis of Federal Real Property Profile Management System (FRPP MS) data. | GAO-19-45R

GSA Policy and Efforts on Managing Damaged Asbestos

GSA policy is to manage asbestos-containing materials in place (i.e., not disturb them unless necessary) and maintain them in an undamaged state (see sidebar, left).

We examined asbestos condition data in GSA's Inventory Reporting Information System (IRIS) database as of May 2018. Of the 536 office buildings under GSA's custody and control, 45 had at least one case of damaged asbestos-containing material recorded in IRIS.[20] We requested that GSA provide status updates on 14 of these buildings, as well as two buildings with suspected asbestos containing-materials that were damaged. We selected these buildings because in at least one case, inspectors deemed the damaged material "highly accessible."[21] Accessibility refers to the inspector's ability to access the material, not the frequency with which it is accessed by employees. For example, an occupied office and the flooring of a basement storage closet would both be "highly accessible."

GSA reported that for these 16 buildings, as of July 2018:

- The damaged materials in six buildings had been completely remediated, abated, or otherwise repaired.
- Damaged materials in the remaining 10 buildings were either abated, slated for imminent repair/abatement, or were not friable (e.g., floor tile).

GSA officials explained that they intend to repair all of the damaged material eventually, but that they prioritize asbestos that is severely damaged, friable, or in high-traffic areas.

[20]Because GSA has not entered most owned office buildings' data into IRIS, we are unable to determine if additional instances of damaged asbestos-containing materials exist.

[21]Accessibility refers to the inspector's ability to access the material and assess damage, not the frequency with which it is accessed by employees. For example, an occupied office and the flooring of a basement storage closet would both be "highly accessible."

II. Worker Protections

OSHA Has Reduced Exposure Limits Over Time

Since the 1970s, as the dangers of asbestos have become better understood, OSHA has lowered the permissible exposure limit for asbestos (see figure 4, below).

Figure 4: OSHA Permissible Exposure Limits (PEL) in Workplace Air Since 1971

- **1971:** OSHA established a permissible exposure limit (PEL) in workplace air as an 8-hour time-weighted average of 12 fibers per cubic centimeter (f/cc), concluding that exposure to asbestos levels higher than that constituted a grave danger to human health.
- **1972:** OSHA reduced the PEL to 5 f/cc, with concentrations between 5 and 10 fibers permitted during brief periods only.
- **1976:** OSHA reduced the PEL to 2 f/cc.
- **1986:** OSHA issued two revised standards that reduced the PEL to 0.2 f/cc.
- **1988:** OSHA subsequently imposed a short-term exposure limit of 1 f/cc for exposures measured over a 30-minute sampling period.
- **1994:** OSHA further reduced the PEL to 0.1 f/cc. The short-term exposure limit of 1 f/cc remains in effect.
- **2018:** Current rule remains unchanged from 1994, i.e., workers' PEL is an 8-hour time-weighted average of 0.1 f/cc, and their short-term exposure limit is an asbestos concentration of 1 f/cc as averaged over a sampling period of 30 minutes.

Source: GAO analysis of Occupational Safety and Health Administration (OSHA) regulations. | GAO-19-45R

When concentrations of asbestos detected in the air exceed OSHA's limits, employers (including federal agencies) are required to institute additional engineering and work practice controls to reduce the airborne levels of asbestos. In addition, employers must keep medical records on exposed employees for the duration of employment plus 30 years, among other requirements.

OSHA Plays a Key Role in Protecting Workers From Asbestos

Through regulatory authority under the Occupational Safety and Health Act of 1970, the Department of Labor's Occupational Safety and Health Administration (OSHA) is responsible for establishing standards to protect the health and safety of workers who may be exposed to asbestos in the workplace, and is generally responsible for the inspection of federal employers. Federal agencies are generally required to establish and maintain a comprehensive and effective occupational safety and health program that is consistent with OSHA's standards.[22]

OSHA addresses asbestos hazards in three standards. Two protect workers in specific industries: shipbuilding and construction. OSHA also has general industry standards, designed to protect workers from specific hazards (such as asbestos). All 3 of OSHA's asbestos standards include protective measures such as:

- worker training and certification requirements,
- asbestos warning signs and labels,
- permissible exposure limits for airborne asbestos exposure, which dictate the level of protective measures required by the employer,
- cleaning and housekeeping procedures when asbestos is present,
- work practices during activities that will disturb asbestos-containing materials, such as building renovations, and
- requirements for disposal of asbestos waste.

Building owners must also implement asbestos maintenance programs for buildings that contain asbestos. Under such programs, building owners are to develop an inventory of asbestos materials within the building and periodically examine whether the materials have deteriorated or been disturbed or damaged.[23] In addition, they must establish written procedures or asbestos emergency response plans for building occupants to follow if asbestos fibers are or could be released into the air.

Asbestos-Related OSHA Violations in Federal Facilities Are Relatively Uncommon

According to agency officials, OSHA conducted 4,264 inspections of federal agencies from fiscal year 2013 through February 28, 2018, and found asbestos-related violations at 72 of them (less than 2 percent).[24] OSHA officials noted that while their inspectors look for asbestos hazards during the course of their inspections, they rarely find violations of standards related to asbestos at federal facilities.

During their 4,264 inspections, OSHA primarily cited federal agencies for violations related to electric concerns (2,533 citations), means of egress

[22]Through the Environmental Protection Agency's (EPA) regulatory authority under the Toxic Substances Control Act, (Pub. L. No. 94-469, 90 Stat. 2003 (1976)), as amended, EPA is responsible for protecting state and local government employees who may be exposed to asbestos from their jobs in states without an OSHA-approved state occupational safety and health plan. States with an OSHA-approved state plan adopt and enforce their own standards, which must be "at least as effective" in providing safe and healthful employment conditions as the federal standards.

[23]The requirement to periodically examine the condition of asbestos comes from the General Services Administration.

[24]OSHA's count of inspections of federal agencies excludes the U.S. Postal Service.

II. Worker Protections (continued)

OSHA's Local Emphasis Program on Asbestos

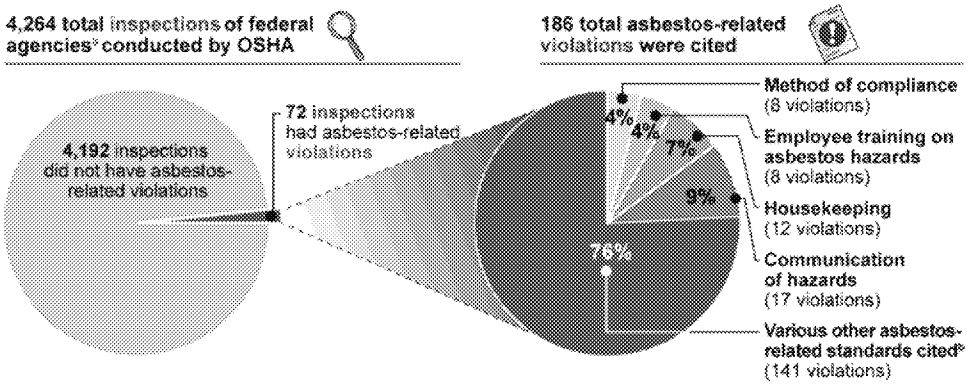
OSHA local emphasis programs, which are enforcement strategies designed and implemented at the regional and local levels, address hazards or industries that pose particular risks to workers. OSHA currently has one asbestos-related local emphasis program, located in its Englewood, Colorado office.

Each year, thousands of construction projects in Colorado involve asbestos abatement or demolition that disturbs asbestos-containing materials. OSHA developed its local emphasis program in 2012 to address non-compliance with asbestos standards enforced by the Colorado Department of Public Health. OSHA has renewed the program every year since its inception.

OSHA officials noted the violations found by its asbestos-related local emphasis program are typically with respect to private sector projects, rather than federal buildings.

(853 citations), and communication of hazards (782 citations). OSHA also cited federal agencies for violations of substance-specific standards, such as bloodborne pathogens (195 citations) and lead (121 citations). In contrast, OSHA cited agencies for 186 instances of asbestos-related violations during 72 inspections (see figure 5, below).

Figure 5: Asbestos-Related Violations Cited During OSHA Inspections of Federal Agencies from Fiscal Year 2013 - February 28, 2018



Source: GAO analysis of Occupational Safety and Health Administration (OSHA) data. | GAO-19-45R

[a]This count excludes inspections of the U.S. Postal Service.

[b]During this period, a total of 71 different asbestos-related standards (i.e., distinct subparagraphs under either 29 C.F.R. 1910.1001 or 1926.1101) were cited. Thirty-four standards were cited once, and several others were cited a few times each.

The most frequently cited specific asbestos-related violations include:

- communication of asbestos hazards (17 citations), i.e., failure to clearly label areas where employees could be exposed to asbestos;
- asbestos related housekeeping (12 citations), i.e., failure to keep areas as free as possible of asbestos-containing waste, debris, and accompanying dust;
- employee training of asbestos hazards (8 citations); and
- compliance with prescribed methods for asbestos abatement (8 citations), i.e., failure of building owners to determine and inform employers and employees about the presence, location, and quantity of asbestos-containing material at the work site.

OSHA has inspected incidents of accidental asbestos release and cited agencies for conditions that have caused such accidents. However, those types of violations are uncommon, according to OSHA data.

The type of federal facilities where OSHA found violations varied. They included military bases, a veterans' hospital, an Immigration and Customs Enforcement processing center, a Department of Justice correctional institution, a federal power plant, an American Job Center, and national parks.[25]

[25]OSHA does not fine federal agencies. During its inspections at these federal facilities, OSHA "cites" the agency by issuing a Notice of Unsafe or Unhealthful Working Conditions. It does not assess a penalty.

III. Federal Employee Exposures

OWCP's Five Basic Requirements for Approval of a Claim

For a claim to be approved, the claimant must show that:

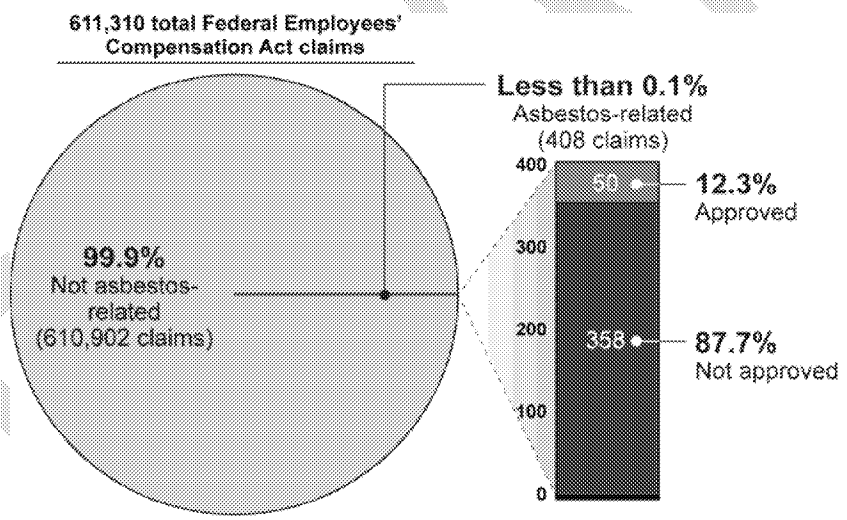
1. **Statutory time requirements have been satisfied** (claimant must file within 3 years of becoming ill).[27]
2. **The injured or deceased individual was a federal civilian employee or considered an employee for the purposes of the Federal Employees' Compensation Act.**
3. **The occurrence or "fact" of injury** (i.e., the claimant actually experienced the employment factors alleged to have occurred, and a medical condition has been diagnosed in connection with the event or employment factor).
4. **The injury occurred in the performance of duty.**
5. **The disability (or death) was caused by the injury claimed.**

A Small Percentage of Recent Federal Employee Workers' Compensation Claims Were Asbestos-Related

The Department of Labor's Office of Workers' Compensation Programs (OWCP) administers four disability compensation programs which provide wage replacement benefits, medical treatment, vocational rehabilitation and other benefits to certain workers who experience work-related injury or occupational disease. Within OWCP, the Division of Federal Employees' Compensation administers the payment of compensation to or on behalf of eligible federal civilian employees, among others, for disability or death resulting from occupational injuries and diseases, including diseases resulting from asbestos exposure.[26] OWCP reports that it is currently providing compensation to or on behalf of about 2.6 million current and former federal employees.

A federal employee who has become ill after long-term occupational exposure to asbestos—or who is not symptomatic but has been exposed to asbestos—may file a claim with OWCP. According to OWCP officials, between fiscal year 2013 and March 31, 2018, OWCP received 611,310 claims, and of those, 506,343 were approved and 408 were related to asbestos (less than 0.1 percent). OWCP approved 50 of the asbestos-related claims (see figure 6), i.e., to pay medical expenses and compensation benefits to injured workers and survivors, among other benefits.

Figure 6: Federal Employees' Compensation Act Claims Approved by OWCP from Fiscal Year 2013 - March 31, 2018



Source: GAO analysis of Federal Employees' Compensation Act claims data from the Office of Workers' Compensation Programs (OWCP). | GAO-19-45R

[26]OWCP's Division of Federal Employees' Compensation administers Federal Employees' Compensation Act requirements. Pub. L. No. 64-267, 39 Stat. 742 (1916) (codified as amended at 5 U.S.C. §§ 8101-8193).

[27]In general, individuals have 3 years from the date of injury, or, in cases of latent disability, three years from date upon which they are aware or reasonably should have been aware of the causal relationship between the disability and the employment, to file a claim with OWCP. According to OWCP, where such exposure continues after this knowledge, the time for filing begins on the date of the employee's last exposure. If the claim is not filed within 3 years, compensation may still be allowed if notice of injury was given within 30 days or the employer had actual knowledge of the injury or death within 30 days after occurrence. This knowledge may consist of written records or verbal notification. An entry into an employee's medical record may also satisfy this requirement if it is sufficient to place the employer on notice of a possible work-related injury or disease. See 20 C.F.R. § 10.100.

III. Federal Employee Exposures (continued)

According to the Centers for Disease Control and Prevention (CDC), a person who develops an asbestos-caused disease may not have symptoms until 20 years or more from the time of initial exposure. According to OWCP officials, this long timeframe can lead employees to wait to file a claim with OWCP until they have a better indication of a link between their illness and their exposure. In addition, if a patient develops symptoms within only a few years of being exposed to asbestos, doctors might suspect other lung diseases.

Most Approved Claims for Asbestos-Related Illness Were for Workers in Industrial Occupations

The 50 asbestos-related claims that OWCP approved came from employees at eight federal agencies, with the Department of the Navy (26) and the Tennessee Valley Authority (14) accounting for the most claims. Most of these claimants were employed in industrial occupations, such as

- a boilermaker who used to lie on an asbestos pad while welding to keep from being burned;
- an information technology specialist who was exposed to asbestos on electric piping when he ran cable and set up wireless connections in the basement and tunnels of a federal facility; and
- a facilities manager in an industrial building who was exposed when asbestos fibers were accidentally introduced into the ventilation system of his work area.

By contrast, several of the claims denied represented workers from office buildings. For example, OWCP denied the claim of an office worker who thought that there was exposed asbestos in a hole in the wall in her office but did not provide any evidence of a resulting illness or of the presence of asbestos.